AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Previously Presented) A semiconductor device connecting structure for connecting a semiconductor device onto a substrate, characterized by comprising;

a bonding layer interposed between said semiconductor device and said substrate to accomplish adhesion therebetween, which includes a bonding material for adhering said semiconductor device onto said substrate and a plurality of amoebiform spaces formed within said bonding material,

wherein said plurality of amoebiform spaces are formed closely to each other and span from said semiconductor device to said substrate.

2. (Previously Presented) A semiconductor device connecting structure as defined in claim 1, characterized in that said semiconductor device includes a plurality of bumps arranged in rows, and that said plurality of spaces are formed between said bump rows, outside said bump rows and between said bumps, or at least within at least one of the areas therein.

3. (Cancelled)

4. (Previously Presented) A semiconductor device connecting structure as defined in claim 1, characterized in that said bonding material is an anisotropic conductive film including conductive particles dispersed into a resin film.

5. (Previously Presented) A semiconductor device connecting structure for connecting a semiconductor device onto a substrate, characterized by comprising;

a bonding layer interposed between said semiconductor device and said substrate to accomplish adhesion therebetween, which includes a bonding material for adhering said semiconductor device onto said substrate and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said substrate,

wherein a percentage of said plurality of amoebiform spaces within said bonding material is 5% to 70%.

6. (Previously Presented) A semiconductor device connecting structure as defined in claim 5, characterized in that the percentage of said plurality of amoebiform spaces within said bonding material is 10% to 30%.

7. (Original) A semiconductor device connecting structure as defined in claim 1, characterized in that said bonding layer is made of an epoxy-based bonding material.

8. (Previously Presented) A semiconductor device connecting structure for connecting a semiconductor device onto a substrate, characterized by comprising:

a bonding layer interposed between said semiconductor device and said substrate to accomplish adhesion therebetween, said bonding layer having an action to absorb deformation of said semiconductor device or said substrate by absorbing said deformation with a plurality of amoebiform spaces that span from said semiconductor to said substrate.

9. (Previously Presented) A semiconductor device connecting method for connecting a semiconductor device onto a substrate, characterized by comprising the steps of:

interposing a bonding layer between said semiconductor device and said substrate to accomplish adhesion therebetween;

joining said substrate and said semiconductor device to each other by pressing a pressurizing head against said semiconductor device to pressurize said bonding layer, said pressurizing head being heated in order to also heat said bonding layer;

forming a plurality of spaces that span from said semiconductor device to said substrate closely to each other within said bonding layer by decreasing a viscosity of a bonding material of said bonding layer to cause said bonding layer to flow outward from said semiconductor device; and

absorbing deformation of said semiconductor device or said substrate with said plurality of spaces.

10. (Original) A semiconductor device connecting method as defined in claim 9, characterized in that said bonding material is made of an epoxy-based bonding material.

11. (Previously Presented) A liquid crystal display unit comprising:

a pair of liquid crystal holding substrates disposed in an opposed relation to each other with liquid crystal therebetween;

a semiconductor device connected onto at least one of said liquid crystal holding substrate; and

a bonding layer interposed between said liquid crystal holding substrate and said semiconductor device to accomplish adhesion therebetween, characterized in that said bonding layer includes a bonding material for adhering said semiconductor device onto said liquid crystal holding substrate and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said substrate.

12. (Original) A liquid crystal display unit as defined in claim 11, characterized in that said semiconductor device includes a plurality of bumps arranged in rows, and that said bump rows and between said bumps or within at least one of areas therein.

13. (Previously Presented) A liquid crystal display unit as defined in claim 11, characterized in that said plurality of amoebiform spaces are placed closely to each other.

14. (Previously Presented) A liquid crystal display unit as defined in claim 11, characterized in that said bonding material is an anisotropic conductive film including conductive particles dispersed into a resin film.

15. (Previously Presented) A liquid crystal display unit as defined in claim 11, characterized in that the percentage of said plurality of amoebiform spaces within said bonding material is 5% to 70%.

16. (Previously Presented) A liquid crystal display unit as defined in claim 15, characterized in that the percentage of said plurality of amoebiform spaces within said bonding material is 10% to 30%.

17. (Previously Presented) An electronic apparatus having a plurality of semiconductor driving output terminals and a liquid crystal display unit connected to said semiconductor driving output terminals, characterized in that said liquid crystal display unit includes:

a pair of liquid crystal holding substrates disposed in an opposed relation to each other with liquid crystal therebetween;

a semiconductor device connected onto at least one of said liquid crystal holding substrates; and

a bonding layer interposed between said liquid crystal holding substrate and said semiconductor device to accomplish adhesion therebetween,

wherein said bonding layer includes a bonding material for adhering said semiconductor device onto said liquid crystal holding substrate and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said liquid crystal holding substrate.

18. (Previously Presented) A semiconductor device connecting structure comprising:

a substrate;

a semiconductor device connected to the substrate; and

a bonding layer interposed between the substrate and the semiconductor device, the bonding layer including a bonding material adhering the semiconductor device to the substrate, a plurality of conductive particles dispersed in the bonding material, and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said substrate,

wherein the semiconductor device is adhered to the substrate by the bonding material at a substantially plane center portion of the semiconductor device.

19. (Previously Presented) A liquid crystal display comprising:

a substrate;

a liquid crystal on the substrate;

a plurality of electrodes on the substrate;

a semiconductor device having a plurality of bumps, the semiconductor device being mounted on the substrate, each bump being connected to one of said plurality of electrodes;

a bonding layer interposed between the substrate and the semiconductor device, the bonding layer including a bonding material adhering the semiconductor device to the substrate, and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said substrate,

wherein the plurality of amoebiform spaces are at least formed in an area encompassed by the plurality of electrodes.

20. (Previously Presented) A liquid crystal display comprising:

a substrate;

a liquid crystal on the substrate;

a semiconductor device mounted on the substrate, the semiconductor device including a periphery defining a mounting area;

a bonding layer interposed between the substrate and the semiconductor device, the bonding layer including a bonding material adhering the semiconductor device to the

substrate, and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said substrate,

wherein the plurality of amoebiform spaces are at least formed in the mounting area.

21. (Previously Presented) A liquid crystal display according to claim 20, wherein a region occupied by the bonding layer is larger than the mounting area.

22. (Previously Presented) A liquid crystal display comprising:

a substrate;

a liquid crystal on the substrate;

a plurality of electrodes on the substrate;

a semiconductor device having at least two edges opposing each other, and a plurality of bumps aligned along at least said two edges,

the semiconductor device being mounted on the substrate, each bump being connected to an electrode;

a bonding layer interposed between the substrate and the semiconductor device, the bonding layer including a bonding material adhering the semiconductor device to the substrate, and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said substrate,

wherein the amoebiform spaces are at least formed in an area bordered by the electrodes.

23. (Previously Presented) A liquid crystal display comprising:

a first substrate;

a second substrate including an overlapping area overlapping the first substrate;

a plurality of electrodes formed on the first substrate, each of the plurality of electrodes at least extending toward the overlapping area;

a semiconductor device having a plurality of bumps, the semiconductor device being mounted on the substrate, each bump being connected to one of the plurality of electrodes;

a bonding layer interposed between the substrate and the semiconductor device, the bonding layer including a bonding material adhering the semiconductor device to the substrate, and a plurality of amoebiform spaces formed within said bonding material that span from said semiconductor device to said substrate,

wherein the plurality of amoebiform spaces are at least formed in an area encompassed by the bumps.

24. (Previously Presented) A semiconductor device connecting structure comprising:

a substrate;

a semiconductor device connected to the substrate; and

a bonding layer including a bonding material that joins the semiconductor to the substrate and a plurality of amoebiform spaces disposed in the bonding material that span from said semiconductor device to said substrate, the bonding layer being disposed between the substrate and the semiconductor device,

wherein the semiconductor device is adhered to the substrate with the bonding material which is positioned between adjacent ones of the plurality of amoebiform spaces.

25. (Previously Presented) The semiconductor device connecting structure for connecting a semiconductor device onto a substrate as defined in claim 1, wherein said plurality of amoebiform spaces are adjacent to each other.

26. (New) A semiconductor device comprising:

a first substrate having an upper surface;

a semiconductor device having a lower surface opposing the upper surface of the first substrate; and

a resinous bonding layer interposed in a gap between the lower surface of the device and the upper surface of the substrate, said bonding layer having a plurality of conductive particles therein for making an electrical connection between the substrate and the device, said bonding layer being formed under sufficient heat and pressure to create a multiplicity of discrete irregularly shaped resin free spaces spanning an entirety of the gap between the device and the substrate, said spaces being separated from one another by adjacent regions of resinous material also spanning the gap;

wherein the bonding layer deforms to accommodate relative movement of the device and substrate.

27. (NEW) A liquid crystal display unit comprising:

a pair of liquid crystal holding substrates disposed in an opposed relation to each other with a liquid crystal therebetween;

a semiconductor device connected onto at least one of said liquid crystal holding substrates; and

a resinous bonding layer interposed in a gap between a lower surface of the device and an upper surface of said substrate, said bonding layer having a plurality of conductive particles therein for making an electrical connection between said substrate and said device, said bonding layer being formed under sufficient heat and pressure to create a multiplicity of discrete irregularly shaped resin free spaces spanning an entirety of the gap between said device and said substrate, said spaces being separated from one another by adjacent regions of resinous material also spanning said gap;

wherein said bonding layer deforms to accommodate relative movement of said device and said substrate.